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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,927	02/23/2004	Ranjan Ray	APV31670	7683

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EXAMINER
MORILLO, JANEL COMBS

ART UNIT	PAPER NUMBER
1742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/782,927	Applicant(s) RAY, RANJAN	
	Examiner Janelle Combs-Morillo	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 24-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>021805,051804,022304,033004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-28, drawn to method of casting, heat treating, and working a metal alloy, classified in class 148, subclass 557.
 - II. Claims 29-37, drawn to Ni or Co based sputtering target, classified in class 148, subclass 426 or 425.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process such as powder metallurgy.
3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.
4. This application contains claims directed to the following patentably distinct species: Co based alloys and Ni based alloys. The species are independent or distinct because said groups are discrete and non-overlapping categories of different based alloys.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-19 generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

5. During a telephone conversation with Anthony Venturino on November 29, 2006 a provisional election was made with traverse to prosecute the invention of group I, claims 1-28, and the elected species was Co (cl. 20-23). Affirmation of this election must be made by applicant in replying to this Office action. Claims 24-37 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snowman (US 6,176,944) in view of "Metals Handbook Desk Edition" p 394-396, 616-619; 746-749, 777-778, 848-849.

Snowman teaches a method of making a cobalt article by: pouring molten metal into a mold, solidifying under an argon-purged vacuum, cooling, hot working at temperatures $\geq 1000^{\circ}\text{C}$ by stamping or forging (column 4 lines 52-67). Snowman does not specify a) the parameters of the mold apparatus used in said process, b) preheating the product prior to hot deforming, c) the particular application of hot working between two flat dies.

However, concerning item a), the particular parameters of the casting mold apparatus used in the instant process are held to be a result effective variable. Snowman teaches the instant Co alloy has a melting point of approx. 1495°C (column 4 line 52). As a design choice, it would be obvious to select an alloy for the mold that has a higher melting temperature than the cast alloy (see "Metals Handbook Desk Edition" p746-749 for details on metallic permanent molds). Changes in concentration or temperature will generally not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical, i.e. they produce a new and unexpected result. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages"). A particular parameter must first be recognized as a result-effective variable, i.e.,

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a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Applicant has not shown that the particular parameters chosen produce a new and unexpected result.

Concerning b), preheating the plate prior to working is held to be within the disclosure of Snowman, who teaches working at elevated temperatures.

Concerning c), as stated above, Snowman teaches forging or stamping said Co alloy. Additionally, "Metals Handbook Desk Edition" p 848-849 teaches flat-die forging uses flat-faced dies to forge plates of constant thickness, and teaches that all forgeable metals can be forged in these open dies (p 848, 2nd-3rd column, Fig. 16 on p 849). It would have been obvious to one of ordinary skill in the art to perform flat die forging for the process taught by Snowman because Snowman teaches said Co alloy is hot worked by forging, and because "Metals Handbook Desk Edition" teaches that flat die forging is useful to forging any forgeable metal into a flat shape.

Concerning claims 2-4, "Metals Handbook Desk Edition" teaches preheating molds to high temperatures makes filling the molds easier (p 777, 3rd column). Therefore, mold heating temperature is held to be a effective variable. It would have been obvious to one of ordinary skill in the art to preheat the mold taught by Snowman to a temperature that makes mold filling easier, such as within the instant 30-800°C, 200-800°C, or 100-500°C ranges.

Concerning claims 5-7, Snowman mentions targets thicker than the conventional 0.25 inches (column 2 lines 38-39) can be made by the above process (column 4 line 33).

Concerning claims 8-12, as stated above, Snowman teaches deforming at overlapping temperature.

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Concerning claims 13-19, which mention a strain rate or amount of strain, Snowman teaches $\geq 65\%$ thickness reduction (column 5 lines 1-6). Though Snowman does not teach the strain rate said strain is imposed at, strain rate is held to be a result effective variable, wherein the expected result is amount of deformation in a given time frame (and applicant has not shown that the particular parameters chosen produce a new and unexpected result).

Concerning claims 20, 21, and 23, Snowman teaches an alloy overlapping that of claim 23. "Metals Handbook Desk Edition" teaches that various alloying elements are added to Co alloys in order to provide solid solution hardening or precipitation hardening (p395, 617). For instance, common ranges of Co based superalloys include: 19-30% Cr and 0-9% Ta (Table 1(a), p 395). Table 2 on p 617 teaches several Co based alloys strengthened with Fe. It would have been obvious to one of ordinary skill in the art to add various elements to the cobalt alloy of Snowman, because "Metals Handbook Desk Edition" teaches said additions of Cr, Ta, Fe optimize different properties of said Co based alloy.

8. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snowman (US 6,176,944) and "Metals Handbook Desk Edition" in view of Bartholomeusz (US 6,398,880).

Snowman and "Metals Handbook Desk Edition" are discussed in paragraphs above. Though the prior art of Snowman and "Metals Handbook Desk Edition" do not mention a) preheating the product prior to working or b) using an Co alloy with Cr and Pt or Ta, Bartholomeusz teaches that Co-Cr-Ta or Co-Cr-Pt alloys are useful for magnetic sputtering targets which promote consistent deposition film with good magnetic property performance (column 3 lines 14-17), and processed in a similar hot working (by rolling) at high temperatures, and preheating prior to hot working at a high temperature homogenization/preheat of between

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1600-2600 °F for 10 min- 24 hours (column 5 lines 55-58). It would have been obvious to one of ordinary skill in the art to perform the process of casting, solidifying, flat-die hot forging at high temperatures taught by Snowman and "Metals Handbook Desk Edition" while using the Co based alloy and preheat/homogenization step taught by Bartholomeusz, because Bartholomeusz teaches good magnetic property performance can be achieved by preheating said alloy for a given hold time and subsequently processing at high hot working temperatures.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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JCM
December 20, 2006